

Amendment

U.S. Patent Application No. 09/730,708

this time since there would appear to be no serious burden to examine claims 11-14. Accordingly, the Examiner is respectfully requested to include claims 11-14 as part of the examination and is further respectfully requested to remove the restriction requirement.

At page 2 of the Office Action, the Examiner rejects claims 1-10 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In particular, the Examiner asserts that, in claims 1 and 6, the term “after” is unclear as to whether “after” refers to temporal or spatial order. Moreover, the Examiner asserts that in claims 2-10, the term “axially” is unclear as to whether the stream has to be completely axially injected, or whether the nozzle must be axially located. Furthermore, the Examiner asserts that, in claims 3 and 8, the term “a swirling pattern” or the like appears intended. According to the Examiner, claims 3 and 8 imply that a swirl is a thing which is injected. For the following reasons, this rejection is respectfully traversed.

With respect to the term “after” in claims 1 and 6, per the Examiner’s suggestion, the term “after” is replaced with the term “downstream from.” The amendment is considered editorial in nature and does not at all change the substance of the invention as claimed.

With respect to the term “axial” as recited in claims 2-10 of the present application, one skilled in the art would understand the meaning of introducing the fluid stream in an axial direction. According to the language of claim 2, any method can be used to introduce the fluid stream so long as the fluid stream is introduced in an axial direction. Therefore, it is not necessary to specify whether the nozzle is axially located or whether the stream is completely axially injected, since the inventive step is that the fluid stream is introduced in an axial direction and the precise method of accomplishing the introduction of the fluid stream in an axial direction does not need to be

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specified in the claim.

Claims 3 and 8 are clear to one skilled in the art. To accommodate the Examiner, claims 3 and 8 have been amended to recite that the fluid stream has a swirl pattern. Accordingly, the rejection under 35 U.S.C. §112, second paragraph, should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claim 1 under 35 U.S.C. §102(b) as being anticipated by Austin (U.S. Patent No. 4,272,487). The Examiner asserts that Austin in column 4 and Fig. 1 teaches injecting “cool” combustion gas to shield the process gas. For the following reasons, this rejection is respectfully traversed.

Claim 1 of the present application recites a process for producing carbon black comprising introducing a fluid stream to sheath a process stream downstream from introduction of a feedstock into the process stream. In other words, the fluid stream of the present invention is introduced only after introduction of a feedstock into the process stream.

Austin relates to a carbon black reactor with inner and outer hot combustion gas entries providing protective blanket and extra hot gases for conversion of feed. According to Austin, oil is immediately and intimately contacted with the hot combustion gases. Thus, the feedstock is not introduced after introduction of the combustion gas. In fact, as shown in Fig. 1, both the feedstock and combustion gas are introduced at a zone 4. Thus, Austin does not teach or suggest a fluid stream downstream from introduction of a feedstock into the process stream. Accordingly, the rejection under 35 U.S.C. §102(b) over Austin should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claims 1, 2, 6, 7, 9, and 10 under 35 U.S.C. §102(b) as being anticipated by Dahmen et al. (U.S. Patent No. 3,761,577). According to the Examiner, column 4 and Fig. 1 of Dahmen et al. teaches blanketing process gas with a

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downstream combustion gas, injected axially. For the following reasons, this rejection is respectfully traversed.

Dahmen et al. relates to a secondary combustion process and apparatus for the manufacture of carbon black. The reactor of Dahmen et al. includes a primary reaction zone, a secondary reaction zone, and a quench zone. According to Dahmen et al., a secondary reaction zone is established by introducing secondary hot combustion gases into the reactor through a plurality of small ports. Dahmen et al. does not teach or suggest the introduction of a stream of combustion gases (process stream) at a temperature sufficient to pyrolyze a carbon black yielding feedstock prior to introduction of the feedstock. Thus, Dahmen et al. does not show the presence of a process stream prior to introduction of a fluid stream which is introduced downstream from the feedstock into the process stream. Additionally, the hot combustion gas introduced into the secondary zone of Dahmen et al. is not equivalent to the fluid stream to sheath a process stream as recited in the claims of the present application. As stated earlier, the initiation of a high temperature combustion reaction in the first stage of a carbon black reactor creates a process stream because it initiates a reactive process before the feedstock is added. Dahmen et al. does not teach or suggest a process stream or fluid stream to sheath a process stream downstream from introduction of a feedstock into the process stream. As such, for the reasons set forth above, claims 1 and 6 are patentable. Claims 2, 7, 9, and 10 depend directly or indirectly on claims 1 or 6. Therefore, the reasons set forth above with respect to the patentability of claims 1 and 6 are equally applicable to claims 2, 7, 9, and 10. Accordingly, the rejection under 35 U.S.C. §102(b) over Dahmen et al. should be withdrawn.

Should the Examiner have any questions, he is encouraged to contact the undersigned by telephone.

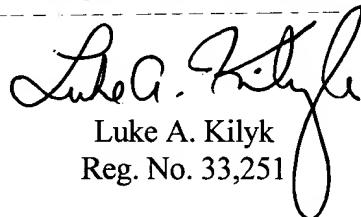
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CONCLUSION

In view of the foregoing remarks, the applicant respectfully requests the reconsideration of this application and the timely allowance of the pending claims.

If any other fees are due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A process for producing carbon black comprising: introducing a fluid stream to sheath a process stream [after] downstream from introduction of a feedstock into the process stream.

3. (Amended) The process of claim 2 wherein the fluid stream [is introduced with swirls]
has a swirl pattern.

6. (Amended) A process for producing carbon blacks comprising:
generating a stream of combustion gases in a first stage of a reactor having a velocity sufficient to flow through subsequent stages of the reactor and a temperature sufficient to pyrolyze a carbon black yielding feedstock;

injecting a carbon black yielding feedstock into the combustion gas in a second stage of the reactor to produce an effluent composed of carbon black and combustion gases;

introducing a fluid stream in a direction axial to the flow of the effluent [after] downstream from the injection of carbon black yielding feedstock, the resulting sheathed effluent passing through at least a portion of a third stage of the reactor; and

cooling, separating, and recovering the carbon black product.

8. (Amended) The process of claim 7 wherein the fluid stream [is introduced with swirls]
has a swirl pattern.